

Rethinking Routine: Applying Industry Technology to Collegiate Recordkeeping Process

An Honors Thesis (HONR 499)

by

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A handwritten signature in black ink, appearing to read "Kevin Gatzlaff", with a stylized, cursive script.

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Abstract

Recordkeeping is a crucial task for any organization, business, or project team. It provides dependable information and data from past experiences that can improve present and future decision making. Recordkeeping, however, is a time consuming process, and it is difficult to know what information to capture and how to best organize that information. Gamma Iota Sigma is an international risk management, insurance, and actuarial science collegiate fraternity with an existing recordkeeping system that is relatively inefficient and only of limited value to the organization's chapters. By designing and creating programming-enabled workbooks in Microsoft Excel, I have worked to improve the efficiency, organization, and applicability of Gamma's recordkeeping system. This project has required an analysis of the current recordkeeping system and discovery of the organization's present and future information needs followed by the creation, testing, implementation, and modification of a new system. By leveraging the many capabilities of Excel and working collaboratively with the Grand Chapter throughout the entire process, the new system should enable chapters to spend less time recordkeeping and more time using their records to make better decisions and further the organization.

Acknowledgements

I would like to thank Dr. Kevin Gatzlaff for advising me through this project. Dr. Gatzlaff took immediate interest in this project and was a tremendous help in the organization of this thesis.

I would also like to thank my fellow executive board members of the Ball State University chapter of Gamma Iota Sigma – Matt Messmer, Chelsea Police, Sam Weiss, Shelby Leichty, Aubrey Colyer, Nathaniel Hunt, and Mary Chelminiak – for their feedback and support. Furthermore, I acknowledge Grace Grant and Nicole Codispoti from the Grand Chapter of Gamma Iota Sigma for their support and the information they provided to make this project exactly what the organization needs.

Lastly, to all the Gamma Iota Sigma chapters, leaders, and members who provided input at various stages of the project, thank you.

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Author's Statement

My involvement with Gamma Iota Sigma began when I joined the Phi chapter at Ball State University in the fall of 2011. In December of 2011, I was elected as Secretary of the chapter, beginning my term the following month. I have held the role ever since and will finish my time as an officer and collegiate member of the organization when I graduate in December of 2014. As Secretary, I was responsible for maintaining chapter records in accordance with the rules of the Grand Chapter by way of submitting monthly reports. Therefore, I am very familiar with the recordkeeping system of the organization and its limitations.

Throughout the report I make frequent mention to the Grand Chapter. To clarify, the Grand Chapter is the governing body of the sixty-three Gamma Iota Sigma chapters that are at various colleges and universities across the United States and in Canada. The Grand Chapter consists of a board of directors and then an executive board composed of current student members and alumni. They determine the content of the monthly chapter reports and the rules of the report point system (to be explained later).

Microsoft Excel was chosen as the medium to house the new recordkeeping system for multiple reasons. Students in Gamma Iota Sigma are familiar with the program, and it is used heavily in the insurance industry for storing and viewing data, computing metrics, automating processes, and much more. I used Excel every day in the two actuarial internships I have had. The ubiquity of Excel was also an important consideration, since all Gamma chapters would need access to the software to operate the new workbooks. Furthermore, Excel contains a programming language called “Visual Basic for Applications” (VBA) that can greatly improve the efficiency of the recordkeeping system.

My passion for Excel, however, was the ultimate factor that led to the decision to use the program. Ever since taking a math software course in the spring of 2013, I have made designing workbooks and programming in Excel a hobby, developing considerable experience over time. With a great understanding of Excel's many features and capabilities, I have been able to make this new system effective and valuable to Gamma Iota Sigma.

Throughout this report, computer science terminology will be used in explanations of the Excel and programming components of this thesis. Here I provide definitions to terminology of this nature:

- A workbook is an Excel file that contains multiple worksheets.
- A worksheet is a canvas for storing data or doing calculations. A worksheet is composed of cells arranged in rows and columns.
- A cell is a single storage unit. In Excel, a cell can contain a value (number or text) or a formula. In a PDF, a cell is one entry on a form where text can be entered.
- Code is programming text. Each line of code is an instruction to the computer.
- A macro or subroutine is like a paragraph of code that, when activated, accomplishes some task.
- A user-defined function is a self-developed function coded in VBA such that users can utilize it in worksheet calculations. In general, a function in Excel is an operator that

takes specified information and returns a result based on calculations embedded in the function.

One final note on terminology. Throughout this thesis I use the words “project” and “thesis” interchangeably to refer to the work described here and the vision of the project as a whole. However, due to the large scope of the project, the content of this thesis is actually a subset of the work that will encompass the entire project once completed. The distinction in scopes is clarified throughout the report.

I would like to conclude this statement with a few notes on Excel workbook design. It is hard to convey in a report the high degree of attention to detail that is required when creating Excel workbooks. I view Excel as a canvas for data, text, code, and graphics, where each and every cell becomes a large collection of decisions. The goals of the project and the needs of Gamma Iota Sigma served as a guide, but much was left to my own creativity and expertise. Overall worksheet layout, incorporating functionality through formulas versus VBA, and worksheet limitations are just a few of hundreds of questions I had to ponder. Adhering to careful attention to detail, however, results in a workbook that appears simple to the naked eye, but has the flexibility and functionality to achieve exactly what is needed for the organization.

Analyzing the Existing Recordkeeping System

Every month, each chapter of Gamma Iota Sigma is responsible for completing a monthly report for the Grand Chapter. Prior to this project, this report was an eight-page PDF form with cells to fill out explaining the details of a chapter's activities, service events, alumni engagement, and other involvement for a given month. The report template was updated and maintained by the Grand Chapter and was readily available online.

Another component of the monthly reports is the point system. Chapters can earn points for holding events, interacting with alumni, and attending conferences. For example, having more than eighty percent of a chapter's membership attend an event earns twenty points while having less than forty percent attend warrants only five points. When a member fills out the details of an event in the report, he or she also calculates the appropriate number of points corresponding to that event. Over the course of an academic year, chapters can earn various awards at the Annual International Conference by reaching a specified threshold of points. These awards include the Well-Rounded Chapter, Excellent Chapter, and Superior Chapter awards. The Grand Chapter hopes that through this point system, chapters will be encouraged to increase the involvement and engagement of their members.

Some positive aspects about the current reporting template are that it contains all the information that the Grand Chapter desires to be reported and PDF files are simple and easy to navigate. Anyone can download Adobe Reader, which is the software needed to complete the form, and filling out the reports forces chapters to keep all their data for each month in one place.

Some of the disadvantages of the system are centered on the time intensive nature of the process. For chapters that are very active, filling out this form can be very time consuming, as they have to fill out supplemental PDF files when they run out of room on the primary report. There are also many redundancies in the report that consume time. For example, each page has a header where the chapter name and report month must be filled out. Thus the secretaries are filling out the same information eight times. From a technical standpoint, it can be noted that PDF forms take up more hard drive space than Excel files containing the same information and they tend to scroll slowly, making it hard to move from page to page. Furthermore, information can only be deleted or edited one cell at a time.

More significantly though are the limitations in which the data in the monthly chapter reports can be used. Suppose a chapter seeks to know how many members, on average, attended company presentations last year. With the current recordkeeping system, someone would have to search through all the monthly reports from the previous year, look for events that were company presentations and then calculate the average attendance. The act of opening multiple files to answer a simple question is very tedious and inefficient. For an organization in a data driven industry, not having the capability to readily retrieve and process information to make more informed decisions is a significant complication. I have spoken with many chapters that keep their chapter information in one source and then fill out the monthly reports separately to circumnavigate this issue. This fix, however, worsens the time consumption problem mentioned previously.

Another perspective to consider when evaluating the old recordkeeping system is that of the Grand Chapter. Every report must be reviewed by the Grand Chapter. Speaking with Ms. Grant, the coordinator of the monthly chapter reporting system, I learned that she spends a considerable amount of time verifying point calculations and making adjustments to reports that were submitted incorrectly. Furthermore, the monthly reports do not lend themselves well to drawing conclusions if, for example, the Grand Chapter wanted to investigate trends in a chapter's activities over time or compare the involvement of multiple chapters.

Overall, the existing recordkeeping system forces chapters to practice recordkeeping and gives the Grand Chapter a way to monitor the activities of every chapter. The system, however, does not provide an efficient means for using the records, is prone to errors, and is very time consuming. In designing the new recordkeeping system, I have sought to reinforce good recordkeeping techniques, provide a greater connection between the Grand Chapter and collegiate chapters, leverage VBA and Excel features to increase efficiency, and create a framework for insightful data analysis.

Introducing the Project to the Organization

Before initiating this project to change the recordkeeping system for all of Gamma Iota Sigma, I had actually began work on a workbook in the fall of 2013 that would help me keep all of my chapter's information in one place. As it began to take form, I discovered more and more ways to use VBA and other Excel features to increase the capabilities of the workbook. These discoveries excited me to a point where I realized I had the potential to help not only my chapter, but all other chapters in Gamma and the Grand Chapter. On November 21, 2013, I reached out to the Executive Director of Gamma Iota Sigma, Ms. Codispoti, to share what I had been doing and to ask if the Grand Chapter would like to partner to make the idea a reality. Ms. Codispoti was excited by the idea and suggested that I introduce the project at the next Presidents Conference Call hosted by the Grand Chapter to be held on January 23, 2014. This dialog marked the beginning of this thesis and the redesign project as a whole.

The outcomes of sharing the project idea at the Presidents call were positive. Members in attendance were intrigued by the idea and agreed that changing the recordkeeping system would be very useful. From the brief discussion on the subject, however, I could tell that some members needed more information and clarity before they could understand exactly what I was proposing. The phone call and email conversations afterwards resulted in me being introduced to Ms. Grant. I have worked with her closely throughout the whole project.

To provide clarification, address any confusion from the President's call, and excite other Gamma members, I decided to create a video. I prepared for the video by taking considerable time to flesh out key features of the workbook I had been developing for my chapter. I also created an Excel replica of the PDF monthly report template. Using screen-capture software, I then recorded myself demonstrating how to use the workbooks while explaining my overall vision of the new recordkeeping system as it would impact chapters. I took a total of four takes before developing a satisfactory video. I uploaded the demonstration on YouTube on February 11, 2014. Readers of this thesis can view the video at <http://youtu.be/DHGGKbjGkbw4>.

While the majority of feedback from the call and the video was little more than statements like "That's a great idea!" and "I look forward to seeing it," at least I had assurance knowing that nobody was opposed to the change that I was seeking to make. Ms. Grant did share with me that the video helped clarify the project ideas that I had shared with her previously in emails and over the phone.

Outlining the Project

After creating the prototype video, I continued to have discussions with my chapter executive board, officers from other chapters, and the Grand Chapter to ask questions, clarify concepts, and provide updates. Using what I developed for my video, my own analysis on the existing recordkeeping system, and feedback from others, I created the outline of the project and its components (below).

Project Phases:

- I. Phase 1: Replace PDF monthly reporting template with **Excel Monthly Reporting Template**
 - a. Replicate PDF report while making changes to address concerns raised from analysis of the old recordkeeping system.
 - b. Work with the Grand Chapter to create new features and add new information.
- II. Phase 2: Build the **Database Workbook**
 - a. Design workbook and write VBA code for functionality. The primary goals of this workbook are to create a single place for chapters to store important chapter data and then be able to analyze the data for improved chapter decision making.
 - b. Create feature that automatically fills out new Excel monthly chapter reporting template from Phase 1.
- III. Phase 3: Build the **Grand Chapter Pulling Workbook**
 - a. Design workbook and write VBA code for functionality. The primary goal of this workbook is to increase the accuracy and the efficiency of the Grand Chapter's reviewing process of submitted monthly reports.

Phase Components:

- I. Part 1: Design
 - a. Utilizing analysis of the old system and input from the Grand Chapter and other chapters, design workbooks to meet project goals.
 - b. Use VBA and Excel research to create innovative solutions to obstacles.
- II. Part 2: Test
 - a. Test all the functionality of the workbook, ensuring that all cells, functions, formulas, and VBA code work as intended.
 - b. Send the workbook to other chapters or the Grand Chapter and gather feedback.
- III. Part 3: Repair
 - a. Make updates to the workbook based on testing outcomes.
- IV. Part 4: Implement
 - a. Make finalized workbooks available to other GIS chapters and the Grand Chapter through the organization website.
 - b. Make instructional videos on YouTube so users can begin using the workbooks immediately.

When creating this outline, I had an important choice to make. I could either continue developing the existing workbook I showcased in the video, using it as the Database Workbook for Phase 2, or I could start anew. Three factors went into my decision to create a new workbook entirely when I would start Phase Two. First, when reviewing the official monthly chapter reporting documentation, I found that the data entry categories I had made (Figure 1 in Appendix A) did not coincide with the reporting categories perfectly, which would make programming difficult between the Database Workbook and the Excel Monthly Reporting Template. Secondly, when modifying the existing chapter workbook for use in the video, I made a programming error that erased much of the functionality I had completed. Unfortunately, I did not have a recently saved copy, making this event a major setback. While the workbook looks operational in the video, the reality is that I scrambled to reprogram and design just enough of what was lost to make the video. Since I would have had to work extensively to repair the workbook anyway, I decided creating a new workbook to serve as the Database Workbook would be the best option. Lastly, there were aspects within the original workbook where I felt stuck. I believed that a fresh approach in addition to research would help me overcome some of these obstacles.

I conducted my Excel and VBA research over the course of the summer in 2014. Most of the research is actually informal exposure to Excel workbooks and VBA code. My actuarial science internship that summer provided many opportunities to learn new Excel techniques that came in handy for this project.

To assist readers in following along with the various components of the project – which can be confusing since they often overlap – I have included a timeline (Figure 2 in Appendix A) highlighting the timing of some key events.

Phase One: Replacing Existing Reporting Template

After outlining the entire scope of the project with the Grand Chapter, I began working on Phase 1, designing the Excel workbook that would replace the PDF monthly reporting form. As mentioned previously, I had already created an exact replica of the PDF report in Excel for use in the prototype video. While this first version of the Excel report did not have some key features that would help accomplish the goals of efficiency and error reduction, it did serve as a springboard for discussions between Ms. Grant and I on how the report could be improved now that it is in Excel. What resulted was “Version 2” of the Excel template that was approved for use and implemented by the organization for the August, 2014 monthly chapter reports. This was a milestone for the project since all chapters of Gamma were able to use the Excel template to fill out their reports instead of the PDF form. Figure 3 in Appendix A is a side by side comparison of one section of the PDF report and its corresponding section in Version 2. Below, I highlight some of the key improvements that can be seen in Version 2.

Key Change 1: Addition of membership count.

10	<u>Number of Members</u>	
11	Points are automatically calculated based on the number of members your	
12	chapter had at the end of last year. Please enter that number here. If you are	
13	unsure how many members you had, take a guess and request the official number	
14	from the email above.	

Prior to adding the section above to the report, there was often miscommunication between the Grand Chapter and university chapters on what membership total to use when calculating the percentage of membership in attendance for a particular event. Now the Grand Chapter can clearly see what membership total chapters are using and advise them if the number should be changed. When adding this feature, I carefully considered how to write the description so all chapters could understand what was being asked.

Key Change 2: Automatic fill-ins and point calculations

These new features significantly reduce the amount of time it takes to fill out the report. As mentioned previously, the PDF report required users to fill out the chapter name and the report month on each page. In this Excel version, users enter this information on the first page and Excel carries the information over to every other worksheet. I also designed a drop down for selecting the month, so that the format is consistent across chapters.

Furthermore, based on the membership total introduced in the first key change, the report automatically fills in the percentage attendance and the points earned when users fill out information for an event. The image below is a sample event, with the cells that are

automatically calculated highlighted in green. I wrote the formulas to calculate only when **all** the cells have been filled out for the particular event. This forces chapters to be complete in their reporting, something that the original PDF system could not ensure.

Number of Members Attended:	27	Banner Hung? Y	
Percentage of Membership:	40%		
Date of Event:	9/14/2014	Chapter	Grand Chapter
Event Title:	Resume Workshop	10	
Participating members learned how to construct a stellar resume specific to what insurance recruiters are looking for.			

To make these changes, I had to carefully analyze the point system rules so that the formulas would calculate accurately. Some point categories are subject to special caps or follow different rules based on the month of the report. Due to this complexity, I had to make a few user-defined functions in VBA to return the correct point amounts. The code for these functions can be found in Module1 of the file “Monthly Report Blank V3.xls” on the CD accompanying the original submitted thesis. (See Appendix C for a tutorial on how to locate VBA code in an Excel workbook). Whenever the rules were unclear, I reached out to the Ms. Grant for clarification. One question I asked ultimately led to us writing a new category description to clarify how the points were calculated. To my understanding, the descriptions and directions in the PDF report have not been changed for over two years; this project led us to reevaluate all the text of the report.

Key Change 3: Addition of “Chapter Leaders” worksheet

At the request of the Grand Chapter, the section of the report where chapters enter information about their executive board was moved to be its own page. In this way, we were able to restructure the report to include a new field called “Primary Function.” Many chapters have unique roles on their executive board where the exact responsibilities of that role are not apparent by the position title. The Grand Chapter hopes to use this new field to better understand the exact responsibilities of these ambiguous roles.

Discussions with the Grand Chapter also led to cells being included to add information about chapter advisors. While Gamma Iota Sigma chapters are student led, it is important for advisors to stay in the loop with Grand Chapter communications. Making advisor contact information a section in the report will help ensure this.

Key Change 4: Worksheet Protection

Protecting an Excel workbook means that users are prevented from changing specified cells in specific ways and accessing certain options in the Excel menu. After unlocking each cell that users would need to edit, I set-up “Protection” on each worksheet. While traditionally, this feature of Excel is used to ensure integrity of existing data, I am using it to help prevent

accidental deleting of formulas and to enable tabular scrolling. Tabular scrolling allows users to jump from cell to cell by pressing the “Tab” or “Shift” + “Tab” keys. This may not sound that exciting, but with Worksheet Protection, these keys will only jump between cells that are unlocked instead of through all the cells in the worksheet. Now instead of clicking each cell before typing in information, users can fill out an entire worksheet without use of a mouse or touchpad.

Key Change 5: The “Points Summary” worksheet

Points earned for a particular entry are shown on the right-hand side of each worksheet. However, in this view, there is no way for chapters to see the total points they have earned or how the points they have earned for one month in a particular category compare to points earned from another month. Thus, I created the Points Summary worksheet (Figure 4 in Appendix A). As with the individual point calculations, I had to carefully analyze the points system rules so that my formulas calculate earned points accurately. Since the calculations on this worksheet depend on the individual event point calculations mentioned in Key Change 2, I made adjustments to formulas in both locations to create an efficient, accurate method for calculating points. There is another section almost identical to Figure 4 on the Points Summary worksheet for the Grand Chapter to record the points it approves during the reviewing process. Now chapters can compare the points they submit to the points they are awarded more effectively when the Grand Chapter returns the reports. Hopefully this will encourage chapters to reach out the Grand Chapter to understand any discrepancies and learn how to change their recordkeeping to reduce future errors.

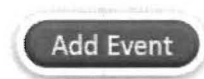
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All these key changes gave Version 2 a look strikingly similar to the original PDF form while providing functionality and safeguards that reduce the time it takes to fill out the report and lower the likelihood of reporting errors. I thought it was important to maintain the existing look to ease the transition from the PDF document to the Excel workbook. After two months of use, Ms. Grant looked over all the completed Version 2 reports and sent an email back to me with some questions about existing features, information about functionality that was not working, and ideas for more changes. Figure 5 in Appendix A is a picture of her initial evaluation. This email was followed up with discussion and investigation of the problems found in Version 2. My corrections and responses to these discussions are integrated in Version 3 of the Excel Monthly Reporting Template.

Most of the changes to create Version 3 were the correction of things I overlooked or basic restructuring of content already in the report. However, Ms. Grant’s idea “to increase the # of events in the original events sheet to 15 events” led me to rethink one of the components of the old recordkeeping system I had maintained in the conversion to Excel. The old recordkeeping system included supplemental PDF forms containing more entries for events. Active chapters used to fill these forms out separately and submit them along with the main report. Similarly, Version 2 contained extra worksheets identical to the “Chapter Events and Meetings” and

“Community Service” worksheets for use in recording surplus events. Even with these worksheets, the possibility that chapters would run out of room remained. Furthermore, the extra sheets made calculations in the Points Summary worksheet difficult.

The solution I developed was a VBA macro that would create a new event entry below the existing entries when the user clicked the “Add Event” button (right). Figure 6 in Appendix A is a diagram that visually explains the actions completed by the macro. The code for this macro can be found in Module2 of the file “Monthly Report Blank V3.xls” on the CD accompanying the original submitted thesis.



The significance of this new feature is that it functions correctly for up to almost 6000 events (after which the worksheet would run out of rows), making it flexible enough to handle all the chapter events and community service activities of some of the most active chapters. However, the report defaults with only three event spaces, thus not to take up file space or clutter the report unless necessary. Automatic point calculations still work for added events, and the Points Summary worksheet was simplified as a result of the change.

Ms. Grant really liked the “Add Event” button and the other revisions for this report. Version 3 rolled out for use starting with the November, 2014 chapter reports. As of the date of submission of this thesis, Version 3 is the latest version and no other versions are in development.

A Foundation for Phase 2

In the time between completing Version 2 of the Excel Monthly Reporting Template and starting the creation of Version 3, I began working on Phase 2 of the project, which was to create the Database Workbook. Of the three phases, this one is the most complicated but also the most valuable. As of the submission of this thesis, this workbook is not completed, but there is a strong foundation for continuing its design after my graduation. In this section, I do my best to distinguish between work already completed or partially completed and ideas developed during the thesis that have yet to be integrated. You may recall that I decided to design a new workbook for this phase instead of using the one I created for the prototype video. Much of the VBA code from the old workbook, however, has found a home in the new workbook. To best convey the progress and advancements in the new workbook, I highlight some “Key Ideas” below.

Key Idea 1: A Points Page

Figure 4 showcases the new point summary table in Version 2 (and Version 3) of the Excel Monthly Reporting Template. To draw a connection between the two workbooks, I created a very similar table on the “Points” worksheet of the new Database Workbook. Unlike the table in the Excel reporting template, however, I will be designing the table in the Database Workbook in such a way that the table columns can be reordered using the drop down shown in Figure 7. Since some chapter executive boards operate on an academic year and others on a calendar year, I believe that this feature will be valuable for a quick and simple analysis of chapter points.

Key Idea 2: The Dashboard

Figure 1 shows part of the opening screen in the database workbook used in the prototype video. While visually appealing, this screen did not have entry categories that lined up with the monthly chapter reporting documentation and involved a lot of scrolling. In contrast, the new Database Workbook contains a dashboard that automatically adjusts based on the entry category you select. When the workbook opens, Excel will automatically take you to the “Dashboard” worksheet regardless of how the workbook was last saved. This functionality and several other action buttons exist on this worksheet in a framework that can fit on a fifteen inch screen with standard zooming. Figure 8 in Appendix A shows the entire dashboard and Figure 9 in Appendix A shows the dashboard with the entry category drop down. Not all of the action buttons are functional as of the submission of this thesis.

Key Idea 3: Dynamic Lists

In the prototype video I pointed out that the drop down lists on the opening screen had many blank spaces. There was also a limit to the number of entries that could be added to the lists. Exposure to Excel during my internship led me to discover a way to use a feature called “Named Ranges” to create a dynamic list that automatically adjusts the length of the list to the

number of items present, however many, while removing blank spaces. Though only partially completed, users of the new Database Workbook can add items to various lists on the “Customize” worksheet and have those items appear in the “Title” entry cell on the dashboard based on the selected event category. Figure 10 in Appendix A explains this process more clearly.

I wanted to incorporate lists into the workbook so that events can have consistent names when repeated from year to year or semester to semester. This will make it possible to view data on the “Analysis” worksheet in a mathematically correct way. For example, if an event was called “Excel Workshop” one year and “Excel Lecture” the next even though the event was ran the same way, a chapter wouldn’t be able to use the Pivot Table that will be in the Analysis worksheet to calculate the average attendance of Excel-type events or compare Excel-type events to other skill development events since the two events would not be able to be grouped together by name.

Key Idea 4: Build Report Browser

In the prototype video, I reveal that the database workbook will have the ability to automatically fill out the Excel Monthly Reporting Template. This means the Database Workbook will use VBA to open the monthly reporting template and copy and paste over all the information necessary to complete the report. All users have to do is enter the report month, their chapter name, and the location and name of the monthly reporting template. In my research, however, I discovered that it is possible for the drive name (for example: C:\ or E:\) of a file on a USB memory stick to be different from computer to computer or even from USB port to USB port when the drive is plugged into a computer. This means that chapters who store these workbooks on a memory stick will have to look up the drive location of the files every time they wish to run a report.

Foreseeing the likelihood of this, I investigated alternative ways for users to tell Excel where the monthly reporting template is stored such that the VBA code will correctly find and fill out a report. The method I derived with uses VBA to summon Windows Explorer to find the Excel Monthly Reporting Template file in much the same way someone finds a document when selecting “File → Open” in Microsoft Word. Figure 11 in Appendix A is a diagram visually explaining what this alternative solution looks like. With this solution, the storage location of the Excel workbooks does not matter and the report building macro can operate correctly using functionality familiar to almost any Microsoft user.

This macro is activated when users click the “Build a Report” button on the dashboard. The code itself is contained in the “BuildReport” module of the file “GIS Chapter Recordbook Template.xlsm” on the CD accompanying the original submitted thesis. This macro also utilizes code from the “Declarations” module. To help avoid potential errors, the macro will only run when users have entered their chapter name, a reporting month, and a reporting year in the correct locations in the Database Workbook. The code will even produce a message box telling which components are missing if they are not filled out.

Key Idea 5: Help Icons and Reminders

Like in the original database workbook, I have placed and will be placing help icons to help new users use the Database Workbook more effectively. I also added functionality to the dashboard to flash a reminder message indicating that a monthly report is due soon. This message is programmed to appear only from the first to the tenth of the month since reports are due on the tenth. This message can be seen in the upper right-hand corner of Figure 8.

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Though incomplete, the new approach in Phase 2 has led to interesting and effective solutions to old problems discovered in the beginning of the project. The process of inventing these solutions has expanded my personal knowledge of VBA and its capabilities and has challenged my creative thinking. The work described above has laid the groundwork for completing Phase 2 and will make it possible to complete the other stages of the overall project after my graduation.

Conclusion

Over the course of about a year, I have successfully convinced an entire international collegiate organization to let me redefine their recordkeeping system, using the industry software Excel to bring increased efficiency and new functionality to the process. While all phases of the project were not completed, the work in this thesis is already accomplishing the project goals of greater efficiency, organization, and applicability. Gamma Iota Sigma is benefiting from this project, but I too have benefited in that this thesis has forced me to think expansively while simultaneously focusing on attention to detail. I have had to consider the concerns of the old recordkeeping system and meet the desires of the Grand Chapter, but with each advancement I made, I also had to think about the future and how the system can be designed with enough simplicity and flexibility to work for everyone. Learning to improve my digital communication with others and to exhibit patience when faced with challenging obstacles were also ways in which I have developed throughout this thesis.

Gamma Iota Sigma has enjoyed the new Excel Monthly Reporting Template so far. I look forward to continuing to work with the organization to complete the Database Workbook, develop the Grand Chapter Pulling Workbook, and integrate everything together.

Reference List

Gaddis, T., & Irving K. (2009). *Starting Out With Visual Basic 2008* (4th ed.). Boston, MA: Pearson Education Inc.

Gamma Iota Sigma. (2014). *Monthly Chapter Report Awards Proposal* [Word Document]. Retrieved from <http://gammaiotasigma.org/officer-resources/monthly-chapter-reporting-resources/>

Microsoft. (2012). *Excel 2013 Developer Reference*. Available from [http://msdn.microsoft.com/en-us/library/office/ee861528\(v=office.15\).aspx](http://msdn.microsoft.com/en-us/library/office/ee861528(v=office.15).aspx)

Appendix A: Figures (Print Screens and Diagrams)

Figure 1: Compilation of three screen shots showing initial data entry categories in the workbook created for the prototype video. At standard viewing with a fifteen inch monitor, only two sections fit on the screen at one time.

Company Presentations

Date:			Restore Previous	Enter
Attendance:				
Company Name:				

Professional Development

Date:			Restore Previous	Enter
Attendance:				
Event Title:				

Social Events

Date:			Restore Previous	Enter
Attendance:				
Event Title:				

Community Service

Date:			Restore Previous	Enter
Attendance:				
Organization Serving:				

Conferences

Start Date:			Restore Previous	Enter
End Date:				
Conference Name:				
Location:				
Attendance:				

Other

Date:			Restore Previous	Enter
Attendance:				
Event Title:				

Figure 2: Thesis Timeline

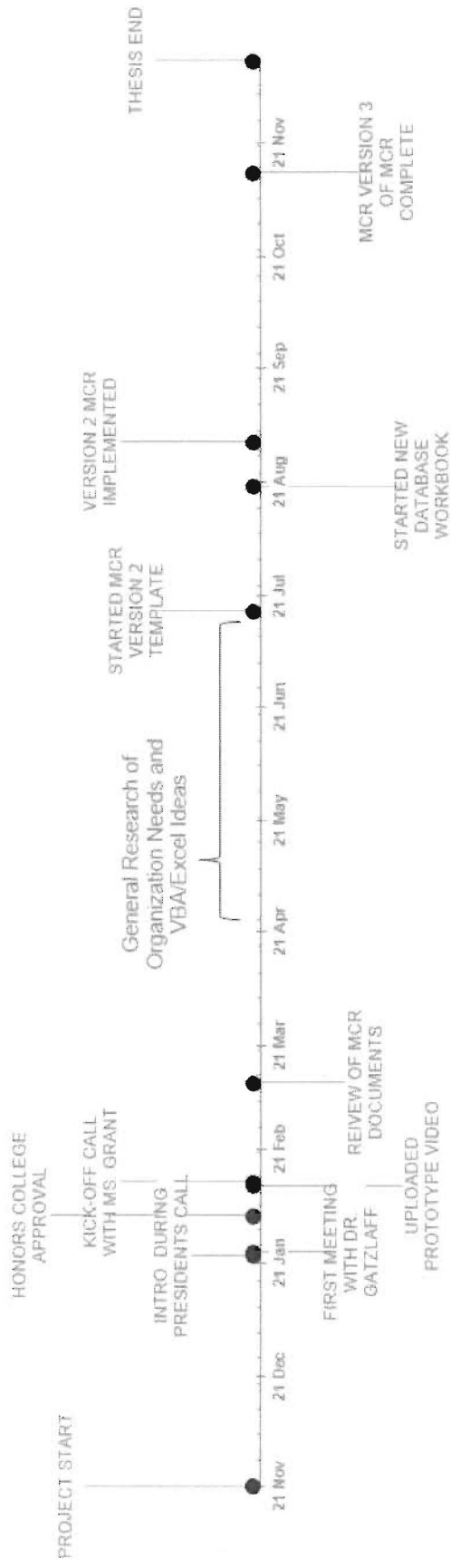


Figure 3: Side by side comparison of PDF reporting template (left) and Excel Version 1 replacement (right)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	Chapter:		phi															
2	Month:		February															
3																		
4	II. Scheduled Chapter Events and Meetings																	
5	Up to Twenty (20) points for each full chapter meeting or scheduled fraternity event held for each month reported. Official GIS banner must be displayed. Chapter meeting or scheduled fraternity event does not include community service/charity events. Points will be determined based on percentage of student membership in attendance.																	
6	100-80% = 20; 80-60%=15; 60-40%=10; 40-5%=5																	
7	Number of Members Attended: <input type="text"/> Banner Hung? <input type="checkbox"/>																	
8	Percentage of Membership: <input type="text"/>																	
9	Date of Event: <input type="text"/>																	
10	Event Title: <input type="text"/>																	
11																		
12																		
13																		
14																		
15																		
16																		
17																		
18																		
19																		
20																		
21																		
22																		

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	Chapter:																	
2	Month:																	
3																		
4	II. Scheduled Chapter Events and Meetings																	
5	Up to Twenty (20) points for each full chapter meeting or scheduled fraternity event held for each month reported. Official GIS banner must be displayed. Chapter meeting or scheduled fraternity event does not include community service/charity events. Points will be determined based on percentage of student membership in attendance.																	
6	100-80% = 20; 80-60%=15; 60-40%=10; 40-5%=5																	
7	Number of Members Attended: <input type="text"/> Banner Hung: <input type="checkbox"/>																	
8	Percentage of Membership: <input type="text"/>																	
9	Date of Event: <input type="text"/>																	
10	Event Title: <input type="text"/>																	
11																		
12																		
13																		
14																		
15																		
16																		
17																		
18																		
19																		
20																		
21																		
22																		

Figure 4: Summary table of points earned per report category on Points Summary worksheet in Version 2 with three months of data.

	YTD	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Submission of Report:	18								10	4	4		
Officer's Meetings:	20								5	5	10		
Display of Chapter:	30								10	10	10		
Submission of Bylaws:	10								0	10	0		
Chapter Officers:	5								5	5	5		
Chapter Events:	140								0	100	40		
Community Service:	0								0	0	0		
Alumni:	13								0	9	4		
President's Conference:	50								50	0	0		
International Conference:	100								0	0	100		
Inter-Chapter Event:	0								0	0	0		
Total:	386	0	0	0	0	0	0	0	80	143	173	0	0

Figure 5: An email from Ms. Grant after evaluating Version 2 of the Excel monthly reporting template.

Hi Dulton,

I hope your semester is going well! After reviewing two months of MCRs, the new template is working really well and I have received several emails from chapters indicating that they like the change. Thank you again!

There are a few edits that I was hoping you might be able to make – please see below.

- The community service events points are not pulling onto the Points Summary sheet in the monthly columns (from the original and extra sheets).
- The chapter officers are not totaling in the YTD column.
- Would you be able to increase the # of events in the original events sheet to 15 events? I’m hoping to eliminate the need for extra sheets, although there are a couple chapter who frequently submit more than 15 events, so we would still want to leave the extra sheets, just in case.
- Same as above with community service events on the original sheet. Could you increase to 5 events and make sure they all pull into the points summary sheet?
- Some reports are still only awarding 4 points when entering the correct submission date (maybe they have an old template?)
- Some reports were reporting the # of members in attendance at events as a date format, but only a handful. Could you make sure that box is set up to be a #?
- Lastly, would you be able to bring the columns for the chapter officers section into one section (I think this may force you to extend the page width, but I am ok with that now). I’d like for it to be one row that says, title, primary function, first, last, email address.
- Finally, this may be the second phase of what you’ve been working on, but when I go from one month to the next, is there a way to automatically have August appear on the September report? I’ve been manually entering August into the September report so both months appear. So for October reports, I will enter August and September manually (except for the chapters who keep the points in that sheet and simply enter October).

Let me know if you have any questions about anything!

Thank you!

Grace

Figure 6: Diagram of “Add Event” macro operation.

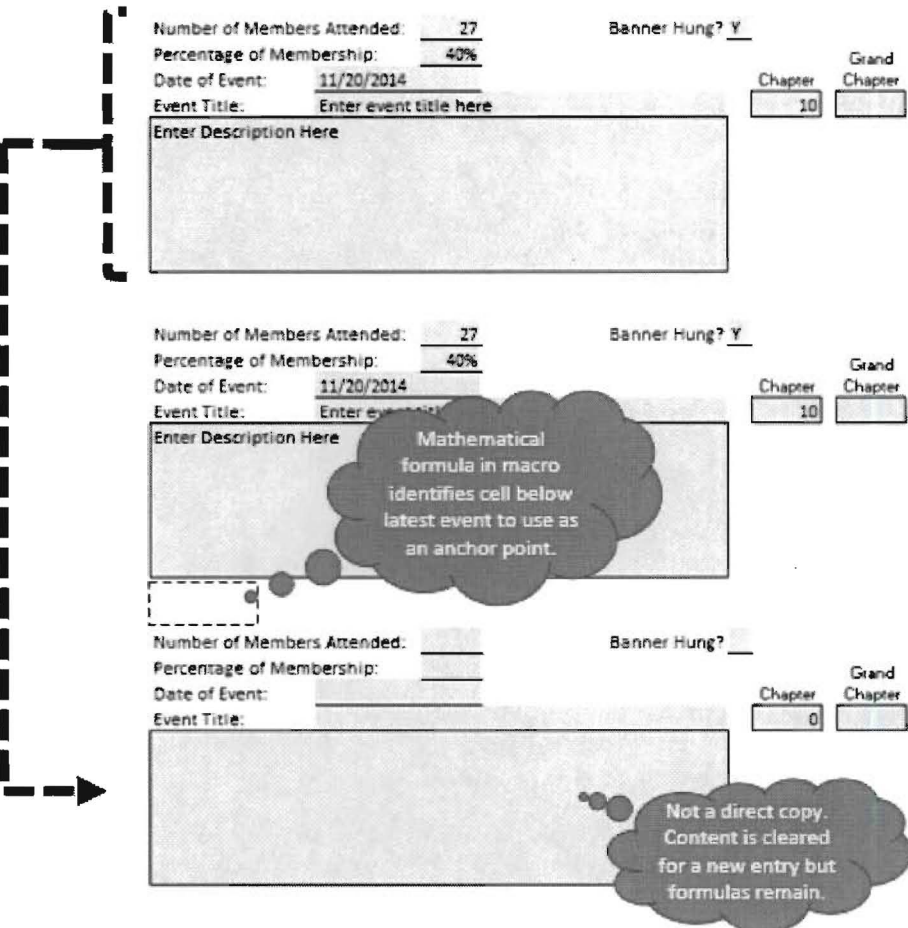



Figure 7: Points summary table in “Points” worksheet in Database Workbook with dropdown.



Points Tracker

Select View:

Calendar

Calendar


Academic

Descending

Ascending

	YTD	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Submission of Report:													
Officer's Meetings:													
Display of Chapter:													
Submission of Bylaws:													
Chapter Officers:													
Chapter Events:													
Community Service:													
Alumni:													
President's Conference:													
International Conference:													
Inter-Chapter Event:													
Total:													

Figure 8: The Dashboard worksheet of the Database Workbook



CHAPTER RECORDBOOK

Phi Chapter

Build a Report

Export Data

Edit Attendance

Month: _____

Year: _____

From: _____

To: _____

Category: _____

Inter-Chapter Event

Date: _____

#: _____

Title: _____

Host Chapter: _____

Participant Chapters: _____

Restore Previous

Enter

Description: _____

***REMINDER: Don't forget to submit a Monthly Chapter Report for last month

ACTION CENTER

EVENT CENTER

Figure 9: Corrected event categories in the dashboard dropdown. Note how the dashboard is different between this figure and Figure 8 since a different selection has been made.

Category:

President's Conference

Scheduled Chapter Events & Meetings

Community & Public Service Activities

Officer Meetings

President's Conference

International Conference

Inter-Chapter Event

Date: _____

Participant Name 1: _____

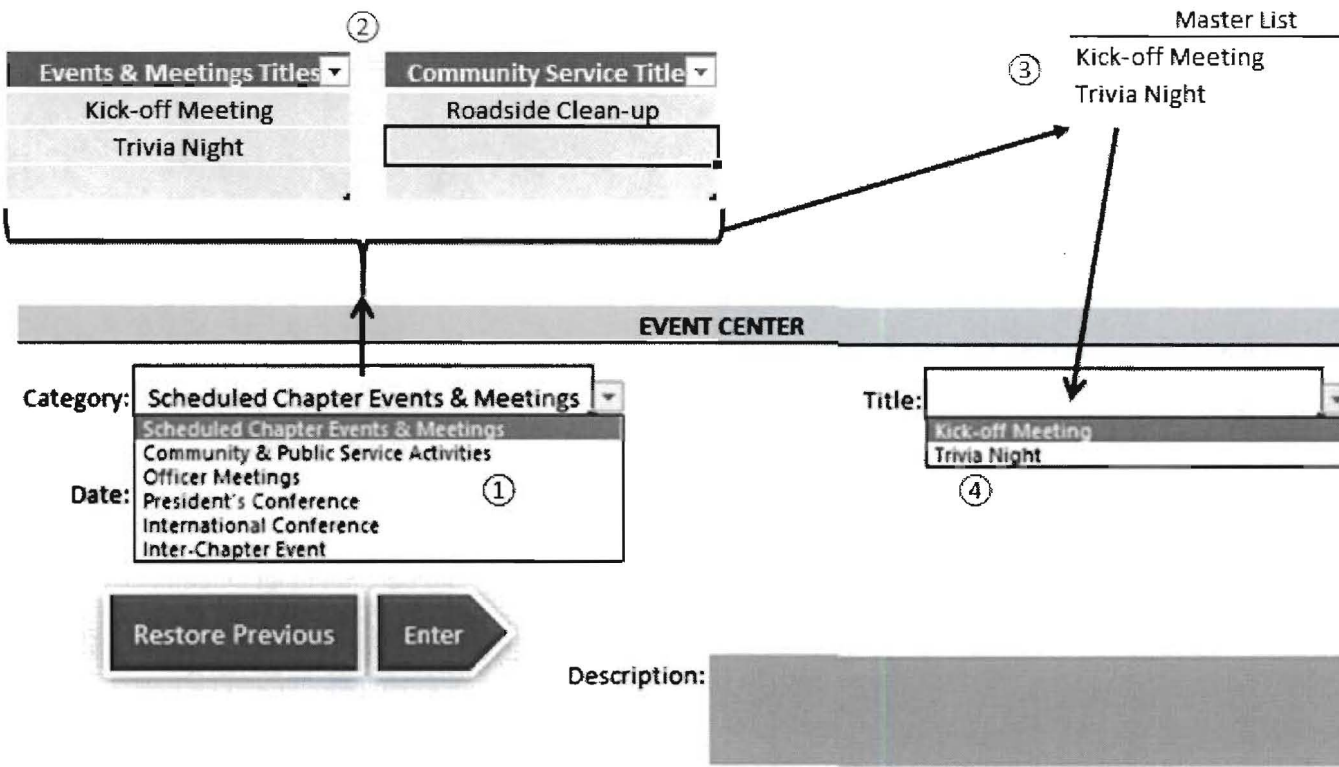
Participant Name 2: _____

Restore Previous

Enter

Notes: _____

Figure 10: A diagram and verbal explanation of the dynamic lists in the Database Workbook.

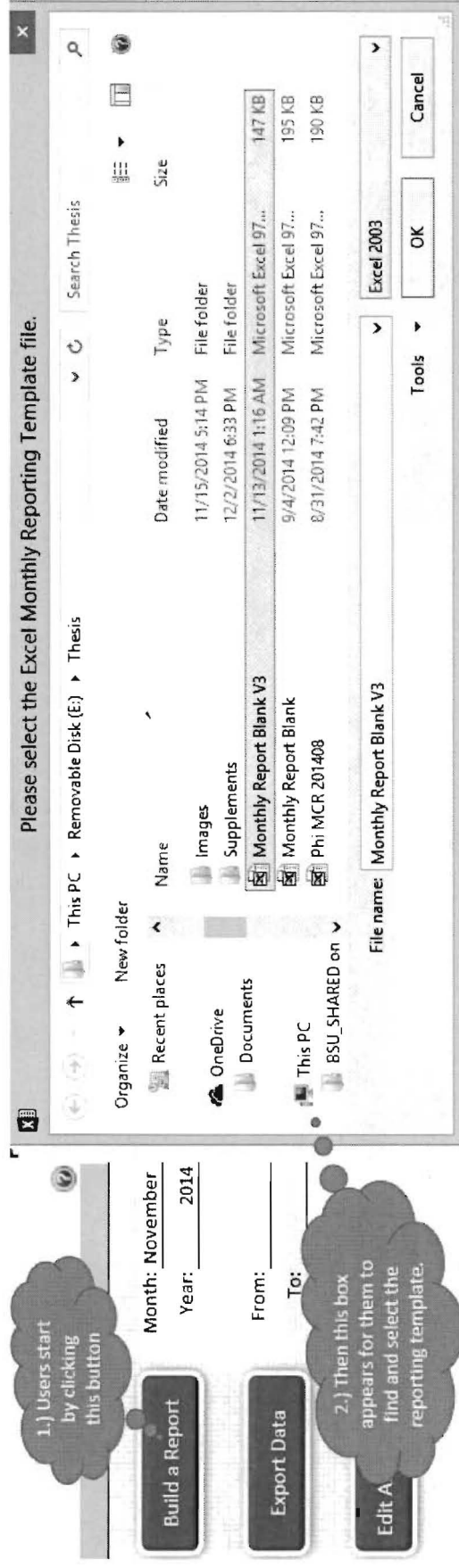


- ① Users select an event category on the dashboard.
- ② Each category corresponds to a specific list. Lists can be added to and edited on the "Customize" worksheet.
- ③ The master list in the "Controls" worksheet takes on the values of the list associated with the selected entry category.
- ④ The drop down for the event title becomes the master list.

--

*If more events are added to the list, the master list will also grow and the drop down will expand. Likewise, removing items from a list shrinks the drop down so no blank spaces remain.

Figure 11: Build Report Browser feature of the Database Workbook.



Appendix B: Contents of Accompanying CD

To provide clarification, many of the Excel workbooks and other digital files that are referenced throughout this thesis are included in a CD submitted with the original print copy of this thesis. A table of file names and descriptions is below.

<i>File Name</i>	<i>Description</i>
<i>PDF MCR – Blank.pdf</i>	This is the old PDF monthly reporting template replaced with the new Excel monthly report template.
<i>Monthly Report Blank V3.xls</i>	This is the third and final version of the new Excel monthly report template that replaced the old PDF version.
<i>GIS Recordbook Prototype Demonstration.wmv</i>	This is the prototype video used to demonstrate concept of chapter Database Workbook and the whole project to other Gamma Iota Sigma chapters.
<i>Monthly Chapter Reporting Structure and Points System.doc</i>	This document from the Grand Chapter website outlines the point system and rules for monthly chapter reporting.
<i>GIS Chapter Recordbook Template.xlsx</i>	This is the incomplete Database Workbook for Phase 2.

When opening the Excel workbooks, you may be given a warning message about macros. This message may appears as a separate window or as a message bar near the top of Excel. To use the workbooks as intended, please click “Enable Macros” or “Enable Content” or “Allow,” whichever appears. All the files on the CD should work with Microsoft Office 2007 and later.

Step 1: Open the workbook where you want to see the code.

Step 2: While holding down the “Alt” key on your keyboard, press the “F11” key. Depending on how your computer handles function keys, you may have to hold down the “Fn” key in addition to the “Alt” key. This will open the VBA window.

Step 3: Use the image below to help you navigate the VBA window.

